



Strasbourg (France)

**E-MRS IUMRS ICEM 2006 Spring Meeting
Nice, France - May 29 – June 2, 2006**

SYMPOSIUM J

**Synthesis, Processing, and Characterization of Nanoscale
Functional Oxide Films**

Symposium Organizers:

Marin Alexe, MPI, Halle, Germany

Valentin Craciun, NILPR, Bucharest, Romania
and University of Florida, Gainesville, USA

Rolly Gaboriaud, University of Poitiers, France

Dhananjay Kumar, North Carolina A&T State University, USA

Kenji Ebihara, University of Kumamoto, Japan

Symposium Support

PANalytical

Papers to be published in Thin Solid Films

Poster Session 2
Tuesday, May 30, 2006
16:30 - 18:00

- J 10 01 TiO₂ nanoparticles generation in polyvinylcarbazole for solar energy conversion
V. Barlier , J. Davenas , V. Bounor Legare, G. Boiteux Polymer Engineering, CNRS-Université Claude Bernard-Lyon 1, 43 Bd du 11 Novembre, 69622 Villeurbanne, France
- J 10 02 Nickel Release Behavior and Biocompatibility of Oxidized Porous NiTi
S.L. Wu (a), X.M. Liu (a), C.Y. Chung (a), K.W.K. Yeung (c), P.K. Chu (a,*), C.L. Chu (a,b), W.W. Lu (c), K.M.C. Cheung (c) (a) Department of Physics & Materials Science, City University of Hong Kong, Kowloon, Hong Kong (b) Department of Materials Science and Engineering, Southeast University, Nanjin 210018, PR China (c) Division of Spine Surgery, Department of Orthopaedics and Traumatology, The University of Hong Kong, Pokfulam, Hong Kong
- J 10 03 PHOTOACTIVITY OF TUNGSTEN TRIOXIDE (WO₃) USED IN WATER SPLITTING
Alexandru Enesca*, Anca Duta*, Roel van der Kroel**, Joop Schonman** *Centre: Product Design for Sustainable Development, Transilvania University, Brasov, Romania, **Delft University of Technology, Julianalaan 136, The Netherlands
- J 10 04 THIN TiO₂ FILMS FOR DYES PHOTODEGRADATION
Luminita ANDRONIC*, Anca DUTA* *The Centre: Product Design for Sustainable Development, Transilvania University of Brasov, Iuliu Maniu 50, Romania
- J 10 05 Deposition of anatase TiO₂ monolayer on ITO substrates for organic electronic applications
Chun-Hao Huang^{1,2}, Thien-Phap Nguyen¹, Chain-Shu Hsu² ¹Laboratoire de Physique des Matériaux et Nanostructures, Institut des Matériaux Jean Rouxel, 2 rue de la Houssinière, BP32229 - 44322 Nantes, France ²Department of Applied Chemistry, National Chiao Tung University, Hsinchu- 30010, Taiwan, Republic of China
- J 10 06 Oxidation of vanadium with reactive oxygen plasma: a photoelectron spectroscopy study of the initial stages of the growth process
Andriy Romanyuk and Peter Oelhafen Institute of Physics, University of Basel Klingelbergstrasse 82, CH-4056 Basel
- J 10 07 PREPARATION AND CHARACTERIZATION OF TITANIUM OXIDE AND TITANIUM NITRIDE THIN FILMS FOR A MULTIFUNCTIONAL HEAT MIRROR
H. Kawasaki, K. Ikeda, T. Ohshima, Y. Suda, Sasebo National College of Technology
- J 10 08 Evolution of fracture properties of organic-inorganic coatings as a function of their structure
A.Ferchichi, S.Calas-Etienne, P.Etienne Laboratoire des Colloïdes, Verres et Nanomatériaux University Montpellier 2
- J 10 09 Dispersion, Rheology, and Optical Property of ITO Nanoparticle Films Prepared via Colloidal Route
Wenjea J. Tseng and Frank Tzeng Department of Materials Engineering, National Chung Hsing University, 250 Kuo Kuang Road, Taichung 402, Taiwan
- J 10 10 Microanalysis of Pd and V-doped TiO₂ thin films prepared by sputtering
D. Kaczmarek, J. Domaradzki, A. Borkowska, Wrocław University of Technology, Faculty of Microsystem Electronics and Photonics, Janiszewskiego 11/17, 50-372 Wrocław, Poland
- J 10 11 Low-temperature preparation of crystalline nanoporous TiO₂ films by surfactant-assisted anodic electrodeposition
Katrin Wessels¹, Armin Feldhoff¹, Jiri Rathousky², Torsten Oekermann¹ ¹Institute of Physical Chemistry and Electrochemistry, University of Hannover, Callinstrasse 3-3A, 30167 Hannover, D 2J. Heyrovsky Institute of Physical Chemistry, Dolejskova 3, 18223 Prague, CZ
- J 10 12 Structural, electrical and optical properties of obliquely nanocrystalline copper oxide thin films
F.Chaffar Akkari, R.Brini, M.Kanzari and B.Rezig Laboratoire de Photovoltaïque et Matériaux Semi-conducteurs -ENIT BP 37, Le belvédère 1002-Tunis, Tunisie
- J 10 13 Titanium dioxide thin films synthesized by sol-gel process for photocatalytic applications
G. Sauthier¹, S. Ricart¹, E. Gyorgy¹, A. Figueras¹ F. Alsina², J. Pascual², ³ ¹Consejo Superior de Investigaciones Científicas, Instituto de Ciencia de Materiales de Barcelona, Campus UAB, 08193 Bellaterra, Spain ²Departament de Física, Universitat Autònoma de Barcelona, Campus UAB, 08193 Bellaterra, Spain ³Institut Català de Nanotecnologia, Campus UAB, 08193 Bellaterra, Spain

(view full abstract)

**J 07
03 11:15**

Title : MOCVD CHALLENGE TO THE GROWTH OF CaCu₃Ti₄O₁₂ THIN FILMS

(view full abstract)

**J 07
04 11:30**

Title : The influence of the radiofrequency beam addition on the electrical and morphological properties of HfSixOy and HfO₂ thin films

(view full abstract)

**J 07
05 11:45**

Title : Study of the impact of the bottom electrode in MIM capacitors structure on physical and electrical properties

(view full abstract)

**J 08
01 13:30**

Title : Epitaxial multi-component rare earth oxide for high-K application

(view full abstract)

**J 08
02 14:00**

Title : Electrical Properties of Hydrothermally epitaxied 1-V Perovskite Thin Films

(view full abstract)

**J 08
03 14:15**

Title : CoFe₂O₄ thin films grown by oxygen plasma-assisted Molecular Beam Epitaxy for spintronics applications

(view full abstract)

**J 08
04 14:30**

Title : Integration of epitaxial biferroic YMnO₃ with ferromagnetic permalloy and platinum electrodes

(view full abstract)

**J 09
01 15:00**

Title : Probing Structure/Property Relations in Nanoscale Oxide Films by Aberration Corrected STEM and Theory

(view full abstract)

**J 09
02 15:30**

Title : Synthesis and Characterization of High-T_c Superconductors: New Precursor Preparation Methods

(view full abstract)

**J 09
03 15:45**

Title : Nucleation mechanism of YBCO films deposited from chemical solutions

(view full abstract)

**J 09
04 16:00**

Title : ENHANCEMENT OF CRITICAL CURRENT DENSITY OF YBCO THIN FILMS BY SELF-ASSEMBLY OF Y₂O₃ NANOPARTICULATES

(view full abstract)

**J 10
01 16:15**

Title : TiO₂ nanoparticles generation in polyvinylcarbazole for solar energy conversion

(view full abstract)

**J 10
02 16:15**

Title : Nickel Release Behavior and Biocompatibility of Oxidized Porous NiTi

Paul Chu, S.L. Wu (a), X.M. Liu (a), C.Y. Chung (a), K.W.K. Yeung (c), P.K. Chu (a,*), C.L. Chu (a,b), W.W. Lu (c), K.M.C. Cheung (c) (a) Department of Physics & Materials Science, City University of Hong Kong, Kowloon, Hong Kong (b) Department of Materials Science and Engineering, Southeast University, Nanjin 210018, PR China (c) Division of Spine Surgery, Department of Orthopaedics and Traumatology, The University of Hong Kong, Pokfulam, Hong Kong

Resume : Porous NiTi shape memory alloy is one of most promising biomaterials for surgical implants due to its unique shape memory effect (SME) and porous structure with open pores. However, the complex surface morphology and larger area of porous NiTi alloy compared to dense NiTi make it more vulnerable from the viewpoint of release of nickel which causes deleterious effects in the human body. It is also more difficult to modify all the exposed surfaces of the porous structure. Oxidation is a proper surface modification technique for porous NiTi alloys in this respect. This simple and economical process yields a protective oxide layer on all the surfaces mitigating the

leaching of Ni. In this work, porous NiTi specimens were oxidized in air at different temperatures. The oxidized samples underwent immersion tests in simulated body fluids (SBF) and inductively-coupled plasma mass spectrometry (ICPMS) was used to determine the amount of nickel released from each sample. The results show that nickel release is significantly suppressed after high-temperature oxidation. The rate of nickel release from the porous NiTi alloys is also found to diminish with increasing immersion time. X-ray photoelectron spectroscopy (XPS) and Auger electron spectroscopy (AES) results reveal that the oxidized surfaces on the surfaces and inside the pores are depleted of nickel and predominantly composed of TiO₂ which acts as a barrier layer against out-diffusion of nickel from the porous substrate. The effects of the oxidation processes on the phase transformation temperature of porous NiTi alloys are studied by differential scanning calorimetry (DSC) thermal analysis. Cell culturing tests are also conducted and the oxidized porous NiTi alloys exhibit no cyto-toxicity and cell proliferation and growth are observed.
(close full abstract)

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(view full abstract)

**J 10
14 16:15**

Title : Iron Oxide in a Silica Matrix Prepared by the Sol-Gel Method
(view full abstract)

**J 10
15 16:15**

Title : Luminescent molecular material by the Sol-Gel route: SiO₂ glassy layers containing a tetraazacyclododecane-triacetic